

# Fluid Power Products, Including Aerospace

## 1998

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Information about the scope of the survey, methodology, explanation of terms and historical notes for this survey may be found in the introduction of the 1997 Manufacturing Profiles, issued August 1999.

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These data are also available through the U.S. Department of Commerce and STAT-USA Electronic Bulletin Board by subscription. To access, dial 202-482-3870 and follow the prompts to register. Also, you may call 202-482-1986 or 1-800-STAT-USA, for further information. The Internet address is: [www.stat-usa.gov/](http://www.stat-usa.gov/).

NOTE: Data are now published on the new North American Industry Classification System (NAICS)

basis and therefore are not always comparable to the old Standard Industrial Classification (SIC) code. For further information on NAICS, see [www.census.gov/epcd/www/naics.html](http://www.census.gov/epcd/www/naics.html).

### Summary of Findings

In 1998, fluid power product manufacturers, including aerospace, had shipments of \$11,951 million, an increase of 3.2 percent from \$11,576.3 million reported in 1997. Hydraulic and pneumatic valves decreased 0.6 percent to \$3,360.8 million in 1998 from \$3,379.7 million in 1997. Fittings and assemblies for tubing and hose, excluding plumbers' brass goods, increased 10 percent to \$2,589.8 million in 1998 from \$2,350.2 million in 1997. Hydraulic and pneumatic cylinder, actuators, accumulators, cushion, and dryers and lubricators decreased 9.5 percent to \$81.2 million in 1998 from \$89.8 million in 1997. Filters of hydraulic and pneumatic systems decreased 2.6 percent to \$501.3 million in 1998 from \$514.8 million in 1997. Hydraulic and pneumatic pumps, motors, and hydrostatic transmission components increased 5 percent to \$2,441.2 million in 1998 from \$2,326.3 million in 1997.

Current  
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Address inquiries concerning these data to Primary Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call James Hinckley, 301-457-4772.

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## U S C E N S U S B U R E A U

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U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. Census Bureau



Table 1. Value of Shipments of Fluid Power Products, Including Aerospace: 1998 and 1997  
[Value in thousands of dollars]

Product code	Product description	1998		1997
	Fluid power products, including aerospace. . . .	11,951,065		11,576,347
3329125	Nonaerospace-type hydraulic directional control valves. . . . .	583,558	r/	582,591
3329127	Nonaerospace-type hydraulic valves (except directional control). . . . .	825,357	r/	819,479
3329129	Nonaerospace-type pneumatic directional control valves. . . . .	463,783		517,060
332912B	Nonaerospace-type pneumatic valves (except directional control). . . . .	269,901		266,493
3329121	Aerospace-type hydraulic fluid power valves. .	419,890		393,897
3329123	Aerospace-type pneumatic fluid power valves. .	489,513	r/	495,216
332912D	Parts for fluid power valves. . . . .	308,842		304,996
332912H	Nonaerospace-type flared (metal) fittings and couplings for, and assemblies of tubing used in fluid power transfer systems. . . . .	387,023		348,553
332912J	Nonaerospace-type flareless fittings and couplings, including nonmetal fittings, used in fluid power transfer systems. . . . .	431,752	r/	419,283
332912L	Nonaerospace-type hydraulic and pneumatic fittings and couplings for hose, and manifolds. . . . .	866,557		807,878
332912N	Nonaerospace-type hydraulic and pneumatic assemblies of hose. . . . .	300,649		255,252
332912F	Aerospace-type hydraulic and pneumatic hose or tube end fittings and assemblies and manifolds. . . . .	603,778		519,278
3339993	Nonaerospace-type filters for hydraulic fluid power systems. . . . .	328,836		334,252
3339994	Nonaerospace-type filters for pneumatic fluid power systems. . . . .	113,361		108,544
3339996	Aerospace-type hydraulic and pneumatic filters . . . . .	59,143		71,961
3339998 pt.	Compressed air and gas dryers, and lubricators . . . . .	81,209		89,756
3339951	Nonaerospace-type hydraulic fluid power cylinders and actuators, linear and rotary. . .	1,193,295		1,204,401
3339953	Nonaerospace-type pneumatic fluid power cylinders and actuators, linear and rotary. . .	440,359		465,655
3339955	Parts for nonaerospace-type hydraulic and pneumatic fluid power cylinders, actuators, and related items, n.e.c. . . . .	292,186		284,788
3339957	Aerospace-type fluid power cylinders and actuators, hydraulic and pneumatic. . . . .	1,050,876	r/	960,759
3339961	Nonaerospace-type reciprocating pumps. . . . .	616,781		580,923
3339963	Nonaerospace-type rotary and other fluid power pumps. . . . .	479,501		460,498
3339965	Nonaerospace-type fluid power motors. . . . .	620,491		579,700
3339967	Aerospace-type fluid power pumps and motors. . . . .	256,598	r/	224,541
3339969	Parts for fluid power pumps, motors, and hydrostatic transmissions. . . . .	467,826		480,593

n.e.c. Not elsewhere classified. pt. Part. r/Revised by 5 percent or more from previously published data.

Table 2. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Types: 1998 and 1997  
[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		No. of cos.	Quantity	Value	No. of cos.	Quantity	Value
	Fluid power products, including aerospace. . . . .	(X)	(X)	11,951,065	(X)	(X)	11,576,347
3329125	Nonaerospace-type hydraulic directional control valves . . . . .	(X)	8,271,212	583,558	(X)	7,593,529	r/ 582,591
	Manual:						
3329125110	3- and 4-way monoblock . . . . .	27	3,743,507	120,756	27	3,671,979	128,050
3329125120	3- and 4-way sectional . . . . .	19	1,098,076	225,216	19	r/ 1,071,075	r/ 218,665
3329125130	Other manual . . . . .	5	c/ 44,256	b/ 1,566	4	32,261	1,133
	Solenoid:						
3329125140	2-way types . . . . .	16	463,820	33,560	16	413,459	30,460
3329125150	3- and 4-way types . . . . .	24	1,032,999	120,944	25	1,092,258	134,955
3329125160	Other directional control . . . . .	29	1,888,554	81,516	29	1,312,497	69,328
3329127	Nonaerospace-type hydraulic valves (except directional control) . . . . .	(X)	19,738,745	825,357	(X)	20,355,898	r/ 819,479
	Pressure control:						
3329127110	Relief valves. . . . .	25	a/ 953,300	35,165	27	r/ 1,026,435	r/ 39,628
3329127120	Other, including load sensing and manual types . . . . .	15	(D)	(D)	17	(D)	(D)
	Flow control:						
3329127130	Manual types. . . . .	18	a/ 871,309	19,531	21	r/ 1,040,548	r/ 24,592
3329127140	Other flow control valves. . . . .	24	a/ 2,593,793	61,819	24	3,243,418	69,986
3329127150	Cartridge valves, all types. . . . .	20	10,278,227	220,107	20	10,387,822	222,699
	Electrohydraulic valves:						
3329127160	Pilot-operated, torque motor servovalves. . . . .	9	(D)	(D)	9	(D)	(D)
3329127170	Other types, including proportional. . . . .	13	199,199	a/ 56,817	11	146,840	r/ 47,529
3329127180	Other nonaerospace-type hydraulic valves, including stack and logic. . . . .	25	2,749,840	287,429	25	2,399,348	267,166
3329129	Nonaerospace-type pneumatic directional control valves . . . . .	(X)	16,778,731	463,783	(X)	18,163,430	517,060
3329129110	Manual . . . . .	38	b/ 4,253,310	b/ 78,089	39	r/ 4,455,224	a r/ 82,952
	Solenoid:						
3329129120	Under 1/8 inch port diameter. . . . .	11	b/ 2,780,504	b/ 48,774	12	3,112,164	57,677
	1/8 inch up to and including 1/4 inch port diameter:						
3329129130	3-way types. . . . .	22	b/ 2,497,534	a/ 59,626	24	2,617,715	61,813
3329129140	4-way types. . . . .	21	3,066,263	108,764	22	2,733,507	116,204
	Over 1/4 inch port diameter:						
3329129150	3-way types. . . . .	19	576,740	42,562	20	665,886	47,365
3329129160	4-way types. . . . .	17	1,363,544	76,685	17	1,457,082	84,015
3329129170	All other types. . . . .	5	(S)	7,694	5	(D)	(D)
3329129180	Mechanical, remote pilot and all other types. . . . .	27	(S)	41,589	28	(D)	(D)
332912B	Nonaerospace-type pneumatic valves (except directional control). . . . .	(X)	14,463,327	269,901	(X)	14,342,705	266,493
332912B110	Filter-regulator combination units, integral types . . . . .	14	1,419,173	28,287	14	1,386,920	27,373
332912B120	Other FRs and filter-regulator-lubricator combo units . . . . .	15	556,401	21,932	15	526,703	a/ 20,794
332912B130	Regulators, sold separately. . . . .	19	4,844,253	76,309	20	a/ 4,928,867	a/ 78,919
332912B140	Flow control valves. . . . .	28	a/ 4,047,039	a/ 102,185	31	4,046,080	103,099
332912B150	Check, shuttle, exhaust, needle and all other types . . . . .	27	b/ 3,596,461	a/ 41,188	30	r/ 3,454,135	36,308
3329121	Aerospace-type hydraulic fluid power valves. . . . .	(X)	1,388,946	419,890	(X)	1,321,154	393,897
	2-, 3-, and 4-way directional control valves:						
3329121110	Manually or mechanically operated. . . . .	17	(D)	(D)	17	(D)	(D)
3329121120	Solenoid operated. . . . .	25	(D)	(D)	25	a/ 75,652	b/ 54,849
3329121130	Motor operated. . . . .	9	29,865	20,321	9	(D)	(D)
3329121140	Electrohydraulic servovalves. . . . .	8	101,274	139,795	7	93,305	125,529
3329121150	Flow, pressure, and other types of hydraulic valves . . . . .	27	444,132	b/ 110,763	28	r/ 462,974	a r/ 120,403
3329123	Aerospace-type pneumatic fluid power valves. . . . .	(X)	1,071,363	489,513	(X)	1,157,083	r/ 495,216
3329123110	Pneumatic valves, all types. . . . .	30	a/ 1,071,363	a/ 489,513	28	1,157,083	r/ 495,216
332912D	Parts for fluid power valves. . . . .	(X)	(X)	308,842	(X)	(X)	304,996
332912D110	Parts for nonaerospace-type hydraulic and pneumatic valves, sold separately. . . . .	57	(X)	201,939	61	(X)	209,722

Continued

Table 2. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Types: 1998 and 1997  
[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		No. of cos.	Quantity	Value	No. of cos.	Quantity	Value
332912D120	Parts for aerospace- type hydraulic and pneumatic valves, sold separately. . . . .	24	(X)	106,903	23	(X)	95,274
332912H	Nonaerospace-type flared (metal) fittings and couplings for, and assemblies of tubing used in, fluid power transfer systems. . . . .	(X)	(X)	387,023	(X)	(X)	348,553
332912H110	Flared fittings: Brass and bronze (SAE 45 degrees and 37 degrees) . . . . .	9	(X)	(D)	9	(X)	(D)
332912H120	Carbon steel (JIC 37 degrees). . . . .	12	(X)	149,196	12	(X)	138,905
332912H130	Other, including alloy steel. . . . .	14	(X)	69,725	14	(X)	60,967
332912H140	Assemblies of tubing. . . . .	7	(X)	(D)	8	(X)	(D)
332912H150	Assemblies of tubing and hose. . . . .	7	(X)	48,010	7	(X)	46,475
332912J	Nonaerospace-type flareless fittings and couplings, including nonmetal fittings, used in fluid power transfer systems . . . . .	(X)	(X)	431,752	(X)	(X)	r/ 419,283
332912J110	Metal types: Brass and bronze. . . . .	15	(X)	88,042	16	(X)	91,008
332912J120	Carbon steel. . . . .	12	(X)	100,575	13	(X)	89,684
332912J130	Stainless steel. . . . .	14	(X)	a/ 224,919	15	(X)	r/ 227,556
332912J140	Other, including alloy steel. . . . .	7	(X)	a/ 10,931	9	(X)	7,598
332912J150	Nonmetal fittings, including plastic. . . . .	9	(X)	7,285	9	(X)	3,437
332912L	Nonaerospace-type hydraulic and pneumatic fittings and couplings for hose, and manifolds . . . . .	(X)	(X)	866,557	(X)	(X)	807,878
332912L110	Permanent hose end fittings (crimped and swaged) . . . . .	19	(X)	358,227	19	(X)	327,325
332912L120	Hydraulic and pneumatic reusable end fittings . . . . .	26	(X)	b/ 133,968	28	(X)	131,478
332912L130	Hydraulic quick connect and disconnect couplings . . . . .	18	(X)	160,490	18	(X)	152,523
332912L140	Pneumatic quick connect and disconnect couplings . . . . .	24	(X)	90,803	23	(X)	80,450
332912L150	Manifolds and manifold assemblies for fluid power systems . . . . .	19	(X)	78,909	22	(X)	75,062
332912L160	All other, including steel adaptor, swivel, rotating, and extension fittings. . .	24	(X)	a/ 44,160	24	(X)	41,040
332912N	Nonaerospace-type hydraulic and pneumatic assemblies of hose. . . . .	(X)	(X)	300,649	(X)	(X)	255,252
332912N110	Assemblies with permanent end fittings. . . . .	21	(X)	a/ 253,703	21	(X)	213,582
332912N120	Assemblies with reusable end fittings. . . . .	8	(X)	46,946	8	(X)	41,670
332912F	Aerospace-type hydraulic and pneumatic hose or tube end fittings and assemblies and manifolds . . . . .	(X)	(X)	603,778	(X)	(X)	519,278
332912F110	Assemblies of hose and/or tubing. . . . .	14	(X)	a/ 188,619	13	(X)	151,938
332912F120	Quick connect, rotating, swivel, and extension fittings . . . . .	11	(X)	167,741	10	(X)	151,901
332912F130	Manifolds for aerospace hydraulic systems. . . . .	6	(X)	46,884	6	(X)	c/ 45,059
332912F140	Aerospace hose and tube fittings, n.e.c. . . . .	15	(X)	a/ 200,534	14	(X)	a/ 170,380
3339993	Nonaerospace-type filters for hydraulic fluid power systems . . . . .	(X)	(X)	328,836	(X)	(X)	334,252
3339993010	Hydraulic fluid filter assemblies, with or without filter element installed: Low pressure (below 301 psi). . . . .	25	a/ 725,348	a/ 48,140	26	r/ 707,828	a r/ 48,410
3339993020	Medium pressure (301 to 2,999 psi). . . . .	18	710,981	26,693	18	853,174	28,059
3339993030	High pressure (3,000 psi and above). . . . .	15	164,852	39,700	14	r/ 177,026	a r/ 43,045
3339993040	Filter replacement elements: Reusable (cleanable) type. . . . .	14	a/ 1,076,630	a/ 18,073	15	1,185,096	20,592
3339993050	Nonreusable type. . . . .	25	13,256,752	167,059	24	r/ 13,172,947	a r/ 162,480
3339993060	Strainers and separators, filter parts, and accessories . . . . .	19	(X)	a/ 29,171	20	(X)	a/ 31,666
3339994	Nonaerospace-type filters for pneumatic fluid power systems . . . . .	(X)	(X)	113,361	(X)	(X)	108,544
	Air supply filter assemblies and filter replacement elements, excluding those shipped as part of a FR or FRL combo unit:						

Continued

Table 2. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Types: 1998 and 1997  
[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		No. of cos.	Quantity	Value	No. of cos.	Quantity	Value
3339994010	Coalescing types, including elements sold separately . . . . .	15	(X)	50,138	14	(X)	45,056
3339994020	Other types, including elements sold separately . . . . .	12	(X)	35,944	12	(X)	a/ 35,507
3339994030	Air exhaust mufflers, diffusers, filter parts and air preparation accessories. . . . .	15	(X)	27,279	16	(X)	27,981
3339996	Aerospace-type hydraulic and pneumatic filters . . . . .	(X)	(X)	59,143	(X)	(X)	71,961
3339996010	Hydraulic. . . . .	7	(X)	(D)	6	(X)	(D)
3339996020	Pneumatic. . . . .	3	(X)	(D)	3	(X)	(D)
3339998 pt.	Compressed air and gas dryers, and lubricators . . . . .	(X)	743,527	81,209	(X)	796,268	89,756
	Compressed air and gas dryers:						
3339998872	Refrigerated dryers. . . . .	4	(D)	(D)	5	32,009	37,357
3339998874	Dessicant dryers. . . . .	4	(D)	(D)	7	(D)	(D)
3339998879	Other compressed air and gas dryers. . . . .	4	(D)	(D)	4	(D)	(D)
3339998880	Lubricators for pneumatic systems, sold separately . . . . .	8	633,929	14,408	8	a/ 684,153	a/ 15,494
3339951	Nonaerospace-type hydraulic fluid power cylinders and actuators, linear and rotary. . . . .	(X)	4,736,601	1,193,295	(X)	4,516,122	1,204,401
	Hydraulic cylinders, excluding electrohydraulic:						
	Tie-rod types:						
	Standard NFPA and JIC tie-rod types:						
3339951110	Less than 1,500 psi. . . . .	21	168,886	41,055	24	151,912	r/ 37,747
3339951120	1,500 to 3,000 psi. . . . .	21	229,832	95,064	22	239,079	97,355
3339951130	Greater than 3,000 psi. . . . .	6	(D)	(D)	8	(D)	(D)
3339951140	Other tie-rod types. . . . .	17	(D)	(D)	20	(D)	(D)
3339951150	Threaded/weld fused combination. . . . .	45	a/ 2,965,675	a/ 720,651	48	2,764,181	739,525
3339951160	Telescoping. . . . .	19	119,433	107,577	20	109,634	99,070
3339951170	Mill type. . . . .	10	20,277	18,337	13	23,873	20,139
3339951180	Other, including those threaded at both ends . . . . .	23	690,285	a/ 73,959	24	660,137	68,409
3339951190	Electrohydraulic types. . . . .	9	a/ 6,160	a/ 21,361	10	r/ 6,604	r/ 20,508
33399511A0	Hydraulic rotary actuators. . . . .	14	b/ 60,997	b/ 52,338	14	59,949	53,946
3339953	Nonaerospace-type pneumatic fluid power cylinders and actuators, linear and rotary. . . . .	(X)	6,285,440	440,359	(X)	6,813,214	465,655
	NFPA interchangeable cylinders:						
3339953110	Steel. . . . .	18	284,016	86,260	19	r/ 304,424	r/ 86,519
	Aluminum:						
3339953120	Less than 1-1/2 inch bore size. . . . .	6	a/ 49,771	a/ 5,659	6	a/ 55,563	a/ 5,529
3339953130	1-1/2 inch bore size and over. . . . .	19	a/ 328,136	a/ 54,966	22	347,008	54,515
3339953140	Rodless cylinders. . . . .	11	122,663	38,074	12	119,819	39,623
	Other pneumatic cylinders:						
3339953150	Less than 1-1/2 inch bore size. . . . .	23	a/ 3,859,806	119,703	26	a/ 4,266,060	r/ 138,555
3339953160	1-1/2 inch bore size and over. . . . .	35	a/ 1,529,852	a/ 103,503	36	1,614,971	111,894
3339953170	Pneumatic rotary actuators. . . . .	15	111,196	32,194	15	r/ 105,369	r/ 29,020
3339955	Parts for nonaerospace-type hydraulic and pneumatic fluid power cylinders, actuators, and related items, n.e.c. . . . .	(X)	(X)	292,186	(X)	(X)	284,788
3339955110	Accumulators (bladder, piston, and other types) . . . . .	20	228,849	43,534	23	216,179	43,768
3339955120	Shock absorbers, not for vehicle suspension, and cushions (hydraulic and pneumatic). . . . .	15	3,112,834	b/ 72,525	18	2,744,272	70,743
3339955130	Reservoirs, intensifiers, and other devices for fluid energy absorption and/or storage. . . . .	13	7,424	2,794	13	13,501	r/ 2,661
3339955140	Parts for nonaerospace-type hydraulic and pneumatic cylinders, actuators, accumulators, cushions, and nonvehicular shock absorbers, sold separately. . . . .	59	(X)	a/ 173,333	62	(X)	167,616
3339957	Aerospace-type fluid power cylinders and actuators, hydraulic and pneumatic. . . . .	(X)	(X)	1,050,876	(X)	(X)	r/ 960,759
	Hydraulic servo-actuator assemblies (linear and rotary):						
3339957110	Mechanical input. . . . .	6	16,554	148,586	6	r/ 26,484	r/ 172,559

Continued

Table 2. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Types: 1998 and 1997  
[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		No. of cos.	Quantity	Value	No. of cos.	Quantity	Value
3339957120	Electrical input. . . . .	7	22,452	351,181	7	r/ 15,441	r/ 248,850
3339957130	Combination input. . . . .	4	(D)	(D)	4	(D)	(D)
	Hydraulic utility actuators:						
3339957140	Linear actuators (cylinders). . . . .	8	a/ 18,820	a/ 99,241	9	a/ 21,151	99,181
3339957150	Rotary actuators (limited rotation). . . . .	2	(D)	(D)	2	(D)	(D)
3339957160	Shock absorbers, snubbers, and cushions, all types, excluding oleo strut assemblies. . . . .	9	(D)	(D)	9	(D)	(D)
3339957170	Pneumatic actuators (linear and rotary). . . . .	7	(D)	(D)	8	(D)	(D)
3339957180	Accumulators (bladder, piston, and other types). . . . .	10	11,451	16,431	11	10,729	8,482
3339957190	Reservoirs, intensifiers, and other devices for fluid energy absorption and/or storage. . . . .	5	b/ 1,459	a/ 12,967	6	b/ 1,457	b/ 9,131
33399571A0	Other aerospace-type fluid power cylinders, rotary actuators, cushions and related items, n.e.c. . . . .	4	(X)	2,269	3	(X)	(D)
3339955150	Parts for aerospace-type hydraulic and pneumatic cylinders, actuators, accumulators, cushions, and related items, sold separately . . . . .	14	(X)	83,569	13	(X)	r/ 72,865
3339961	Nonaerospace-type reciprocating pumps. . . . .	(X)	2,125,116	616,781	(X)	1,894,152	580,923
	Axial piston:						
	Variable displacement types:						
3339961110	Closed loop. . . . .	9	1,342,598	383,103	9	1,230,266	366,833
3339961120	Open loop. . . . .	11	b/ 262,568	b/ 120,958	11	292,585	140,958
3339961130	Fixed displacement types. . . . .	8	(D)	(D)	9	(D)	(D)
3339961140	Radial piston types. . . . .	3	(D)	(D)	4	(D)	(D)
3339963	Nonaerospace-type rotary and other fluid power pumps . . . . .	(X)	3,139,564	479,501	(X)	3,075,625	460,498
	Gear type:						
3339963110	Internal gear type, including gerotors. . . . .	11	1,031,449	99,029	11	990,342	97,293
3339963120	External gear type. . . . .	16	1,749,346	257,283	17	1,703,786	256,477
	Vane type:						
3339963130	Fixed displacement. . . . .	4	(D)	(D)	4	(D)	(D)
3339963140	Variable displacement . . . . .	5	(D)	(D)	5	(D)	(D)
3339965	Nonaerospace-type fluid power motors. . . . .	(X)	(X)	620,491	(X)	(X)	579,700
3339965110	Pneumatic (air) motors. . . . .	4	(D)	(D)	4	(D)	(D)
	Hydraulic motors:						
	Gear type:						
3339965120	Internal types, excluding gerotors. . . . .	8	(D)	(D)	7	(D)	(D)
3339965130	Gerotor types. . . . .	7	a/ 1,271,430	b/ 203,628	6	1,232,417	189,582
3339965140	External. . . . .	8	169,158	a/ 27,145	8	166,272	26,107
3339965150	Vane types, fixed and variable. . . . .	8	b/ 13,622	b/ 14,828	7	13,479	13,987
3339965160	Radial piston types, fixed and variable. . . . .	2	(D)	(D)	2	(D)	(D)
	Axial piston types:						
3339965170	Fixed displacement. . . . .	8	703,870	91,734	8	646,537	92,213
3339965180	Variable displacement. . . . .	8	128,680	72,320	8	(D)	(D)
3339965190	Prime movers shipped with pumps or sold separately . . . . .	6	(X)	(D)	6	(X)	(D)
3339967	Aerospace-type fluid power pumps and motors . . . . .	(X)	103,533	256,598	(X)	r/ 101,535	r/ 224,541
	Hydraulic pumps:						
3339967110	Fixed and variable displacement types. . . . .	10	b/ 37,282	a/ 140,672	10	r/ 36,675	r/ 131,086
3339967120	Pump/electric motor assemblies, fixed and variable displacement types. . . . .	10	a/ 27,927	a/ 81,261	10	(D)	(D)
3339967130	Other pump packages, n.e.c. . . . .	7	33,004	a/ 12,154	8	39,124	12,606
	Motors:						
3339967140	Pneumatic (air) motors and motor packages . . . . .	1	(D)	(D)	1	(D)	(D)
3339967150	Hydraulic motors, fixed and variable displacement types . . . . .	3	(D)	(D)	3	(D)	(D)
3339967160	Hydraulic motor packages, including motor/gearbox, motor/valve, motor/generator, and similar combination units . . . . .	4	(D)	(D)	4	(D)	(D)
3339969	Parts for fluid power pumps, motors, and hydrostatic transmissions. . . . .	(X)	(X)	467,826	(X)	(X)	480,593

Continued

Table 2. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Types: 1998 and 1997  
[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		No. of cos.	Quantity	Value	No. of cos.	Quantity	Value
3339969110	Hydraulic:						
	Nonaerospace. ....	30	(X)	367,992	31	(X)	386,791
3339969120	Aerospace. ....	9	(X)	89,046	8	(X)	r/ 85,290
	Pneumatic:						
3339969130	Nonaerospace. ....	2	(X)	(D)	2	(X)	(D)
3339969140	Aerospace. ....	2	(X)	(D)	2	(X)	(D)

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. pt. Part. r/Revised by 5 percent or more from previously published data. X Not applicable.

Note: The percent of estimation for each item is indicated as follows: a/10 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 3. Shipments, Exports, and Imports of Fluid Power Products: 1998  
[Quantity in units. Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments		Export shipments 1/		Import shipments 2/	
		Quantity	Value	Quantity	Value	Quantity	Value
3329121, 125, 127	Hydraulic fluid power valves. . . . .	29,398,903	1,828,805	2,661,132	185,582	9,452,328	140,989
3329123, 129, 12B	Pneumatic fluid power valves. . . . .	32,313,421	1,223,197	1,946,183	96,468	22,564,598	139,712
332912D	Parts for fluid power valves; hydraulic, pneumatic, all types . . . . .	(X)	308,842	(X)	76,200	(X)	86,253
3339951 pt., 957 pt.	Hydraulic cylinders and hydraulic actuators (except electrohydraulic types). . . . .	4,794,024	1,939,368	280,139	100,584	790,991	183,657
3339953 pt.	Pneumatic cylinders (tie-rod types). . . . .	661,923	146,885	568	774	23,940	2,656
3339953 pt., 957 pt.	Pneumatic cylinders (except tie-rod types). . . . .	5,876,269	435,299	309,279	37,681	495,147	34,168
3339951 pt., 957 pt.	Fluid power accumulators, hydraulic and pneumatic, and other hydraulic, pneumatic or combination devices for fluid energy absorption and/or storage, all types . . . . .	(X)	79,409	178,846	108,780	339,867	78,065
3339965 pt., 967 pt.	Pneumatic (air) motors and motor packages, all types . . . . .	(D)	(D)	8,279	3,306	6,050	1,172
3339965 pt., 967 pt.	Hydraulic motors, all types. . . . .	3,321,151	571,475	111,025	39,533	185,352	135,449
3339961,963, 967 pt.	Hydraulic pumps, all types. . . . .	5,362,893	1,330,369	4,661,993	333,444	2,718,413	289,762
3339969	Parts for fluid power pumps and motors. . . . .	(X)	467,826	(X)	248,440	(X)	249,968

D Withheld to avoid disclosing data for individual companies. pt. Part. X Not applicable.

1/Source: Census Bureau report, EM 545, U.S. Exports.

2/Source: Census Bureau report, IM 145, U.S. Imports for Consumption.



**Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Numbers: 1998**

Product code	Product description	Export number 1/	Import number 2/
3329121, 125, 127	Hydraulic fluid power valves. . . . .	8481.10.0020	8481.10.0020
		8481.20.0010	8481.20.0010
		8481.20.0020	8481.20.0020
		8481.20.0030	8481.20.0030
		8481.20.0040	8481.20.0040
		8481.20.0050	8481.20.0050
3329123, 129, 12B	Pneumatic fluid power valves. . . . .	8481.10.0040	8481.10.0040
		8481.10.0060	8481.10.0060
		8481.20.0060	8481.20.0060
		8481.20.0070	8481.20.0070
		8481.20.0080	8481.20.0080
332912D	Parts for fluid power valves: hydraulic, pneumatic, all types . . . . .	8481.90.9010	8481.90.9020 8481.90.9040
3339951 pt., 957 pt.	Hydraulic cylinders and hydraulic actuators (except electrohydraulic types). . . . .	8412.21.0015	8412.21.0015
		8412.21.0030	8412.21.0030
		8412.21.0045	8412.21.0045
		8412.21.0060	8412.21.0060
		8412.21.0075	8412.21.0075
3339953 pt.	Pneumatic cylinders (tie-rod types). . . . .	8412.31.0040	8412.31.0040
3339953 pt., 957 pt.	Pneumatic cylinders (except tie-rod types). . . . .	8412.31.0080	8412.31.0080
3339951 pt., 957 pt.	Fluid power accumulators, hydraulic and pneumatic, and other hydraulic, pneumatic or combination devices for fluid energy absorption and/or storage, all types . . . . .	8412.29.8075	8412.29.8075
		8412.39.0080	8412.39.0080
		8479.89.9765	8479.89.9765
3339965 pt., 967 pt.	Pneumatic (air) motors and motor packages, all types . . . . .	8412.39.0040	8412.39.0040
3339965 pt., 967 pt.	Hydraulic motors, all types. . . . .	8412.29.8015	8412.29.8015
		8412.29.8030	8412.29.8030
		8412.29.8045	8412.29.8045
		8412.29.8060	8412.29.8060
3339961, 963, 967 pt.	Hydraulic pumps, all types. . . . .	8413.50.0070	8413.50.0070
		8413.50.0080	8413.50.0080
		8413.60.0020	8413.60.0020
		8413.60.0030	8413.60.0030
		8413.60.0040	8413.60.0040
3339969	Parts for fluid power pumps and motors. . . . .	8412.90.9005	8412.90.9005
		8412.90.9015	8412.90.9015
		8412.90.9025	8412.90.9025
		8412.90.9035	8412.90.9035
		8413.91.9050	8413.91.9050

pt. Part.

1/Source: 1998 edition, Harmonized System-Based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/ Source: Harmonized Tariff Schedule of the United States, Annotated (1998).